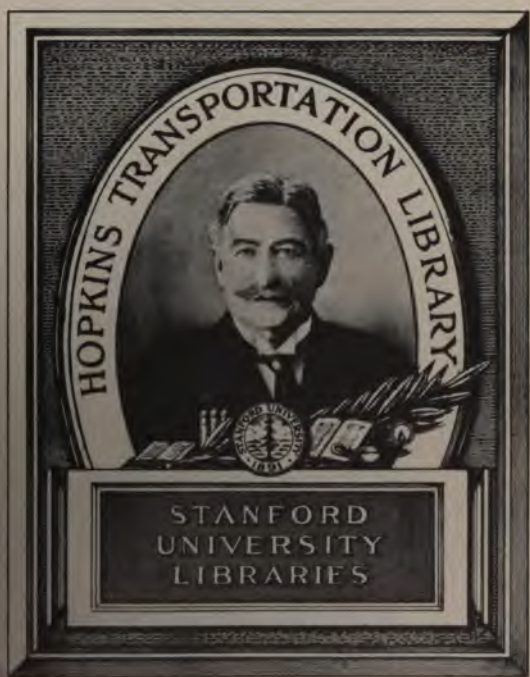
Means, James.
The James Means control for flying machines.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The

JAMES MEANS CONTROL

FOR

FLYING MACHINES

Based upon the principle of Mental Automatism

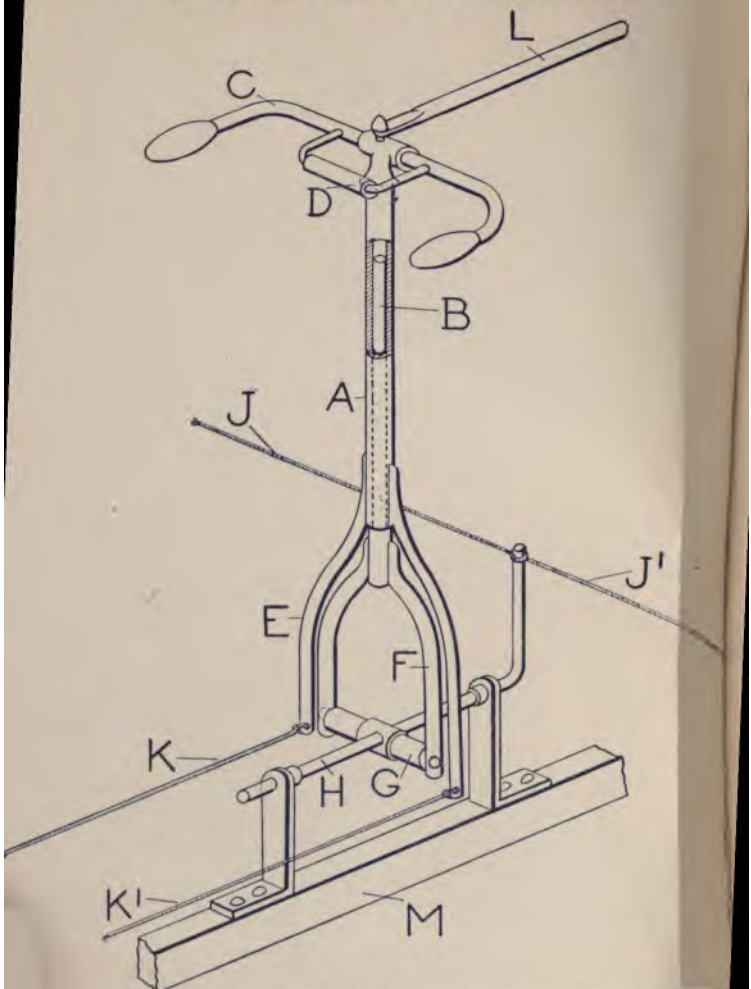
JAMES MEANS

196 Beacon St., Boston, Mass., U.S.A.

1913

Cable Address, JASMEANS BOSTON

THE JAMES MEANS CONTROL



C, Handle bar, rigidly attached to tube A which has a rotary movem about rod B. E, Fork, rigidly attached to tube A and having connected, its terminals, the cables KK′ which actuate the vertical rudder. F, Fo rigidly attached to rod B and having free rocking movement upon terminal pivots. H, Rock-shaft actuated by FG and actuating the ailero *by the* cables JJ′. L, Rod actuating elevator. D, Grip for single hand.

Natural Movements

It will be seen in the diagram that the balancing motions of the aviator are natural, that is to say, in actuating the lateral and longitudinal rudders the movement of the handle-bars is in the direction which the swaying of the aviator's body would take if he sought to correct by his weight the rolling or pitching.

In examining the drawing it will be seen that there are three kinds of movement of the handle-bar:

(1) Both hands forward or aft. (2) Both hands right or left, and also, (3) the ordinary bicycle steer which moves the vertical rudder.

These movements may be made either independently or simultaneously.

To illustrate the former:

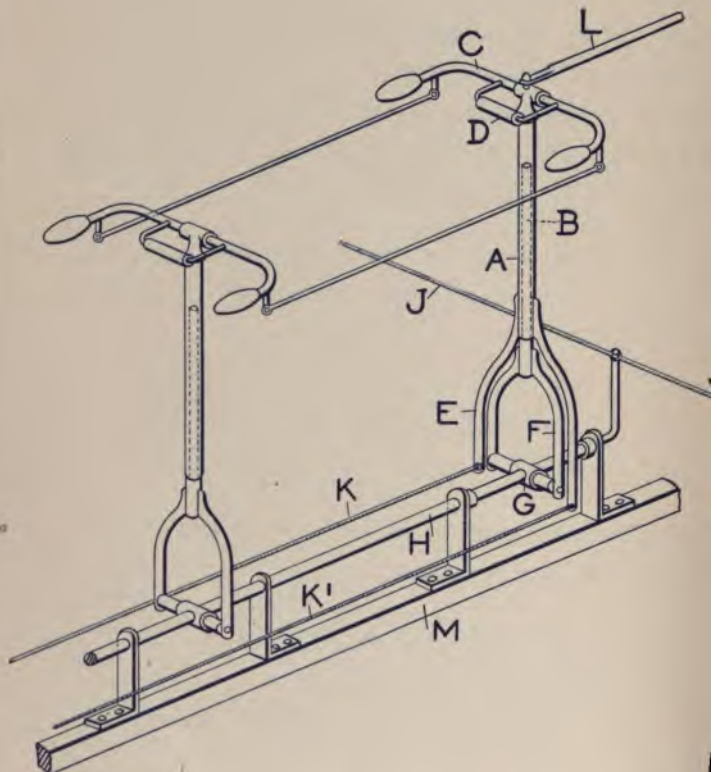
Both hands aft elevates bow.

Both hands forward depresses bow.

Both hands to the right elevates port side.

Both hands to the left elevates starboard side.

THE JAMES MEANS CONTROL



FOR TANDEM SCHOOL MACHINE

The

James Means Control

IN designing a machine for a plurality of flyers the tandem arrangement is the only one which economizes power in locating the seats.

When we consider the strenuous endeavors which are being made to reduce the head resistance it seems remarkable that some designers still place their men side by side, thus wasting power.

In the control for school machine here shown the pupil sits in front lightly holding the handles and exerting no muscular effort. When, after a number of flights he has become familiar with the motions, he is connected with the teacher in the rear by the Roold Audiphone and instructed (see p. 11).

Automatic Balancing

MENTAL AUTOMATISM IN BALANCING may be illustrated by the experience of the novice learning to ride the bicycle. If he is able to keep from falling he does so by extremely rapid thinking which is represented by wabbling. When, after some practice, the learner ceases to wabble, he has ceased to think; his motion is even and graceful.

The mental automatism which he has then acquired is as complete as that which enables him to balance without thought in walking.

The novice in flying makes his initial flight under the most favorable conditions when he is able to make use of previously acquired mental automatism. In the matter of balancing the less he has to unlearn the shorter will be the process of learning. Bicycle handle-bars, unlike steering-wheels, are, in his case, already mentally associated with the act of balancing.

In bicycle riding the swaying of the body is in harmony with the swaying of the machine. The shortest way to proficiency in flying is found in bringing about harmony in the movements of the man and those of the flying machine.

This form of the JAMES MEANS CONTROL is designed first and above all to enable the aviator to take the fullest possible advantage of the mental automatism which he has previously acquired in balancing the bicycle.

As the flying machine is now being developed everything points toward a standardization of control.

That very desirable end will be reached by the survival of the fittest control. The fittest, whichever it may prove to be in the future, will be the one with which, other things being equal, the art of flying is seen to be most easily learned and continuously practised with the fewest accidents.

The Standardization of Flying Machine Control

(From Army and Navy Journal, N. Y., Feb. 1, 1913)

To the Editor of the Army and Navy Journal:

A situation has arisen in England and other European countries regarding the standardization of flying machine control which may be of interest to military officers in this country who are considering the same subject.

In the issue of the *Army and Navy Gazette* (London), of Jan. 4, it is stated that "the time is rapidly coming, and the quicker the better, when controls will have to be standardized. The point is one of particular importance to the military pilot, who may be called upon to navigate machines of different types. If the necessity of standardization is clear, the particular standard to be adopted opens a wide field for discussion, which may be profitably dealt with upon another occasion."

I fully agree with this in the main, although I should have liked to see the words *without undue haste* inserted after "the quicker the better." This may seem like emphasizing a trivial thing, but it is really far from doing that. The author speaks of one control, having natural movements, which has been used for many years and with which most remarkable things have been done, as having for its obvious disadvantage "its radical departure from accepted standards."

It seems to me it is too early in the development of the flying machine to pay much attention to "accepted standards" in matters of standardization. Many of these accepted standards are positively bad. We must always remember that a man likes a thing which he has mastered and the more difficult for him it was to learn to use it, having once mastered it, the harder it is for him to see merit in a simpler thing which is much easier to learn. I think that all those who follow the developments in aviation

and who have never learned to fly with a bad control will agree with me that all controls which use levers moving fore and aft to correct lateral balance are bad.

There is only one way to fix upon a standard control and that is by making records of success *or failure* in teaching pupils.

If a man undertakes to invent a new control, he must ask himself just what it is that he has to do. Certainly it is this, to provide the shortest cut between the brain and the machine. He will then decide whether the flyer shall use hands, feet or both; and whether or not he shall use the shoulders.

I have consulted brain specialists in this matter of connecting the brain with the machine, and regret that I cannot quote their exact language, but the impression left on my mind is this, that one must not divide the current, that if the hands can do it all, it should so be done. This brings us to a single lever control actuating three elements, i.e., for longitudinal, lateral and directional control. Of course, the fingers may be used to actuate electrical connections.

One of the most important questions which comes up is, can the hands do it all? It has been so done upon machines lately designed.

A French manufacturer of aeroplanes who uses a single lever control found that in long flights the arms became very tired in warping and so, instead of improving the design of his surfaces, he added a foot lever to aid the arms in warping! An American manufacturer writes of "The power required for heavy and continuous warping." He tells me that he is perfecting a "balanced warp." We already have balanced ailerons. It is better to design a machine which calls for the least possible muscular effort to control than to devise ways of overcoming unnecessary resistances.

The point I wish to make is this, that progress will be hindered if it be held that departure from "accepted standards" constitutes a disadvantage.

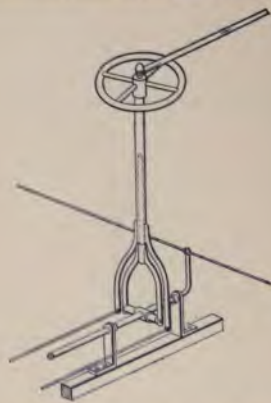
JAMES MEANS.

196 Beacon street, Boston, Jan. 23, 1913.

In the Standardization of Control

There is only one way to determine which control shall be adopted and that is by making and comparing records of success *and failure* in teaching pupils.

THE JAMES MEANS CONTROL



The James Means Control is patented in the United States, Canada and European countries. Applications filed in the United States March 2, 1908.

U. S. patents:

No. 989,022, April 11, 1911
No. 943,120, Dec. 14, 1909 (tandem)

The following is one of the broad claims:

CLAIM 1. In a flying machine, the combination with independently operable lateral and longitudinal rudders, of a vertical rudder, a single manually operated means for simultaneously actuating said lateral and longitudinal rudders to correct disturbances of the lateral and longitudinal stability of said machine, and a controlling device for said vertical rudder mounted on said manually operated means.

For license to manufacture, address

JAMES MEANS,
196 BEACON ST.,
BOSTON, MASS., U.S.A.

ROOLD AUDIPHONE

A Suggestion

I beg to make a suggestion to the United States War Department.

In order to save expense I suggest that another type of machine be added to those now called for, namely, a *School Machine.*

Such a machine, of the same quality of material and workmanship as the types now being made for warfare can be made at a much lower cost than those which fulfill all the present military requirements. They are equally good for school and practice flying.

JAMES MEANS.

¶ The James Means Control may be seen in the air by military officers at any time by appointment.

¶ Please address

JAMES MEANS
196 BEACON STREET
BOSTON, MASS., U.S.A.